

Fig. 1

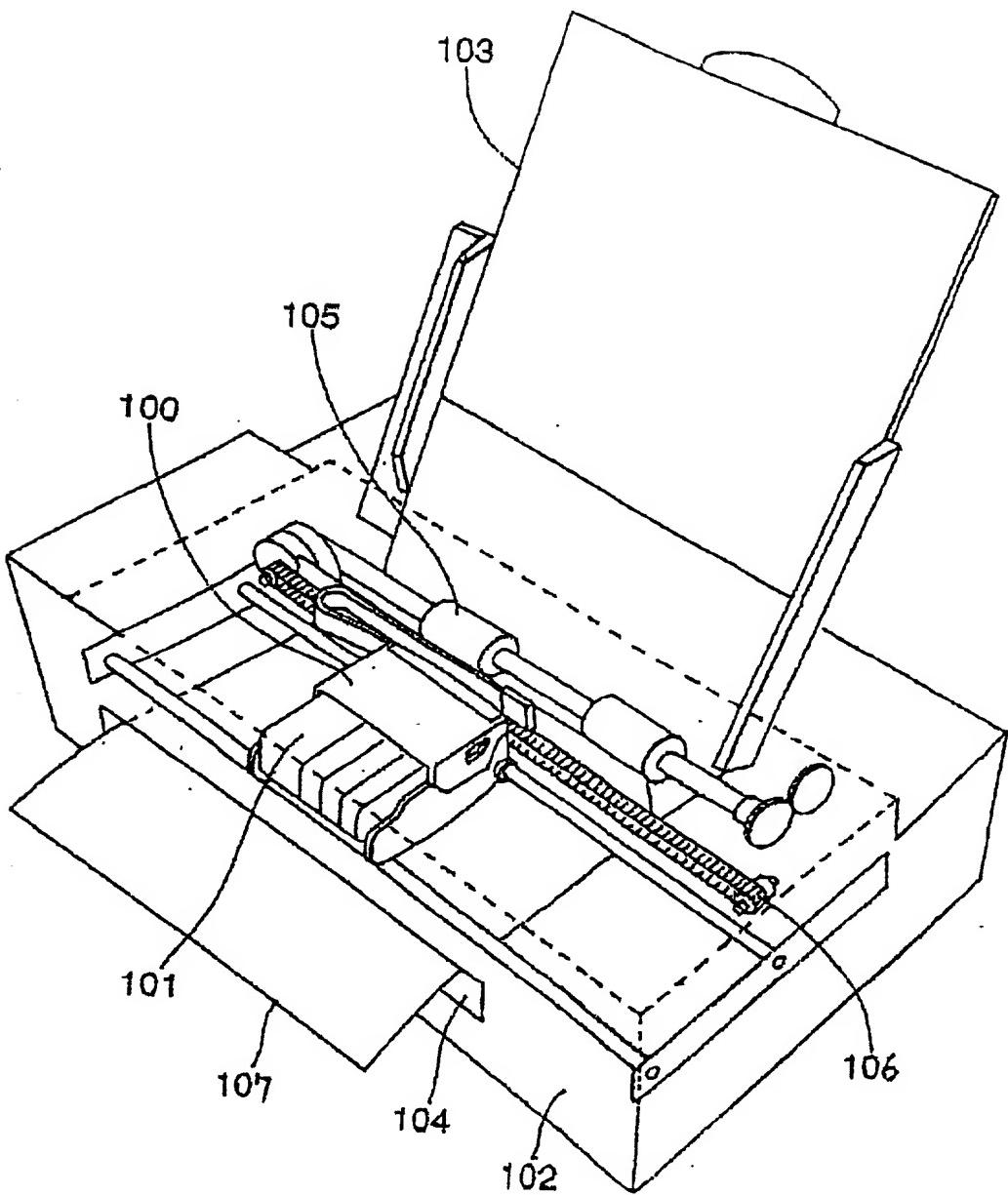


Fig. 2

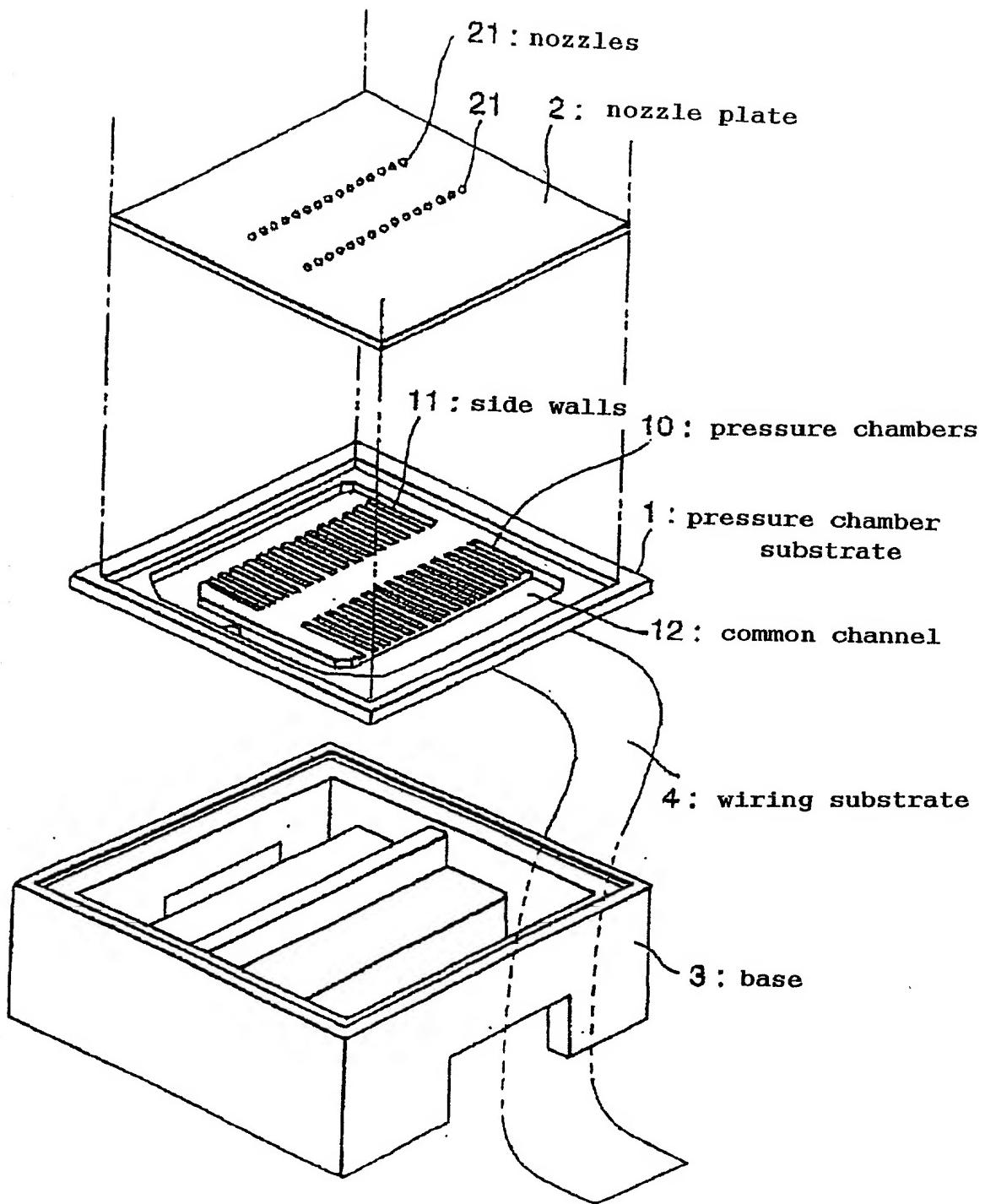
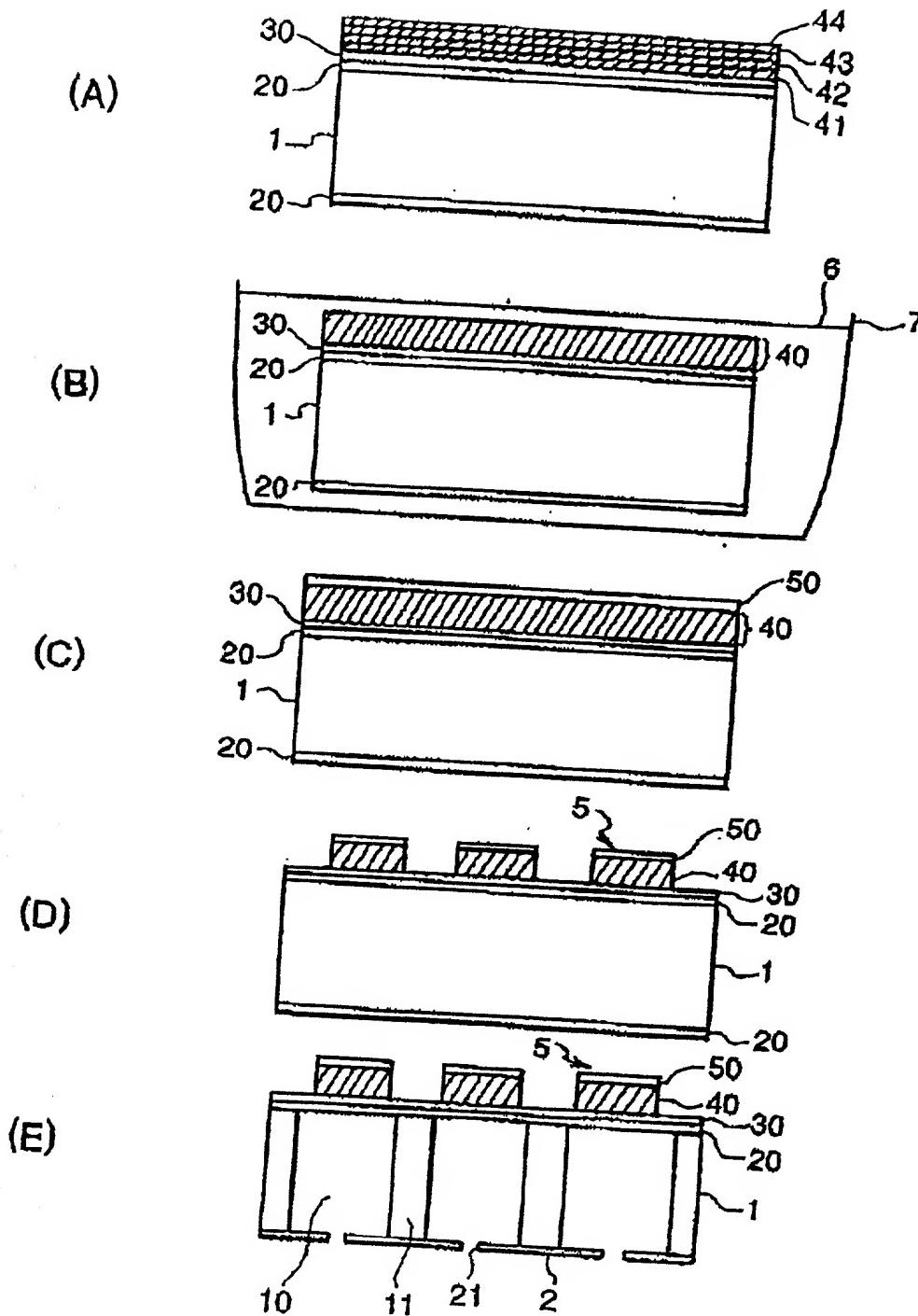


Fig. 3



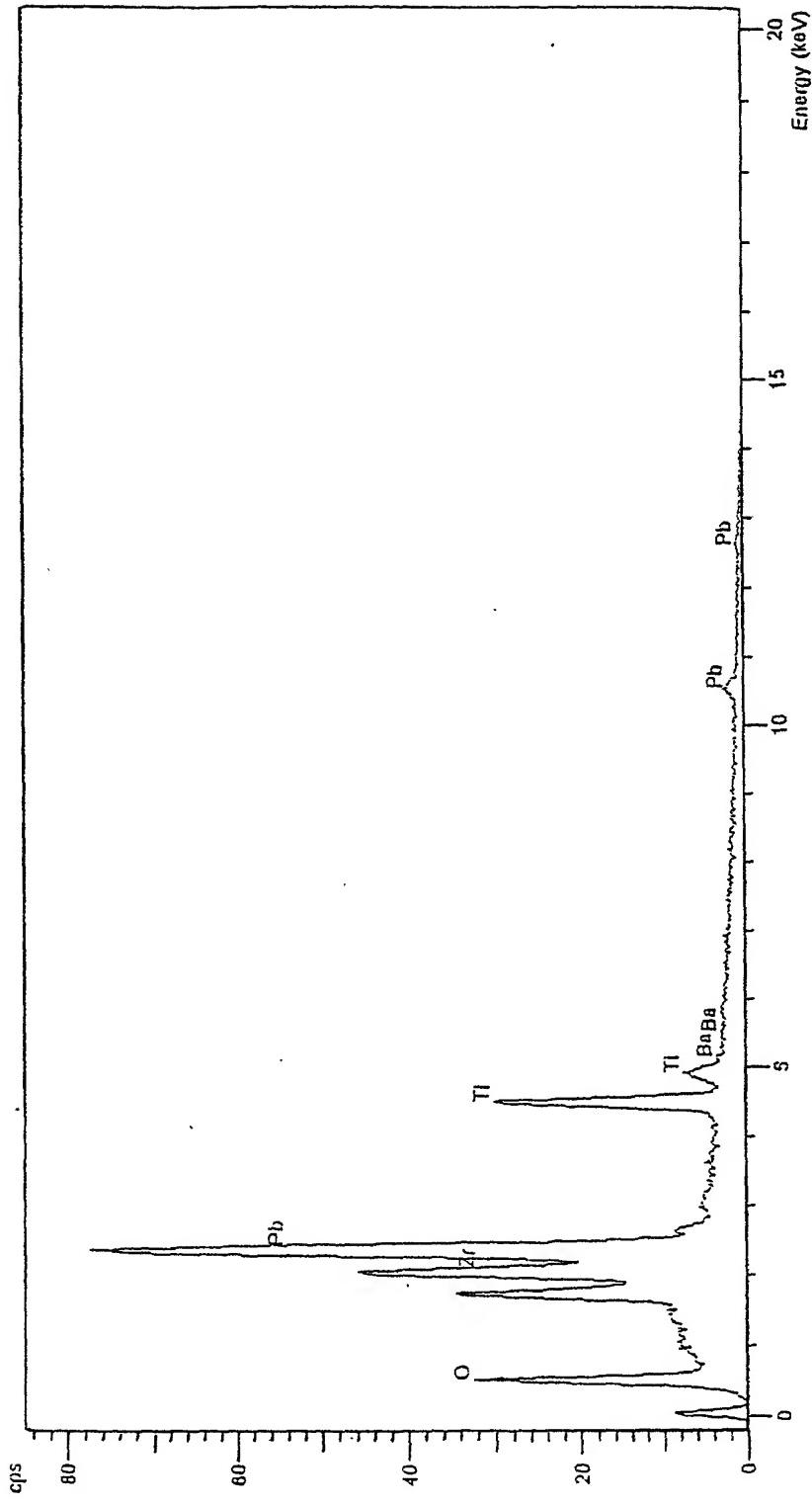


Fig. 4

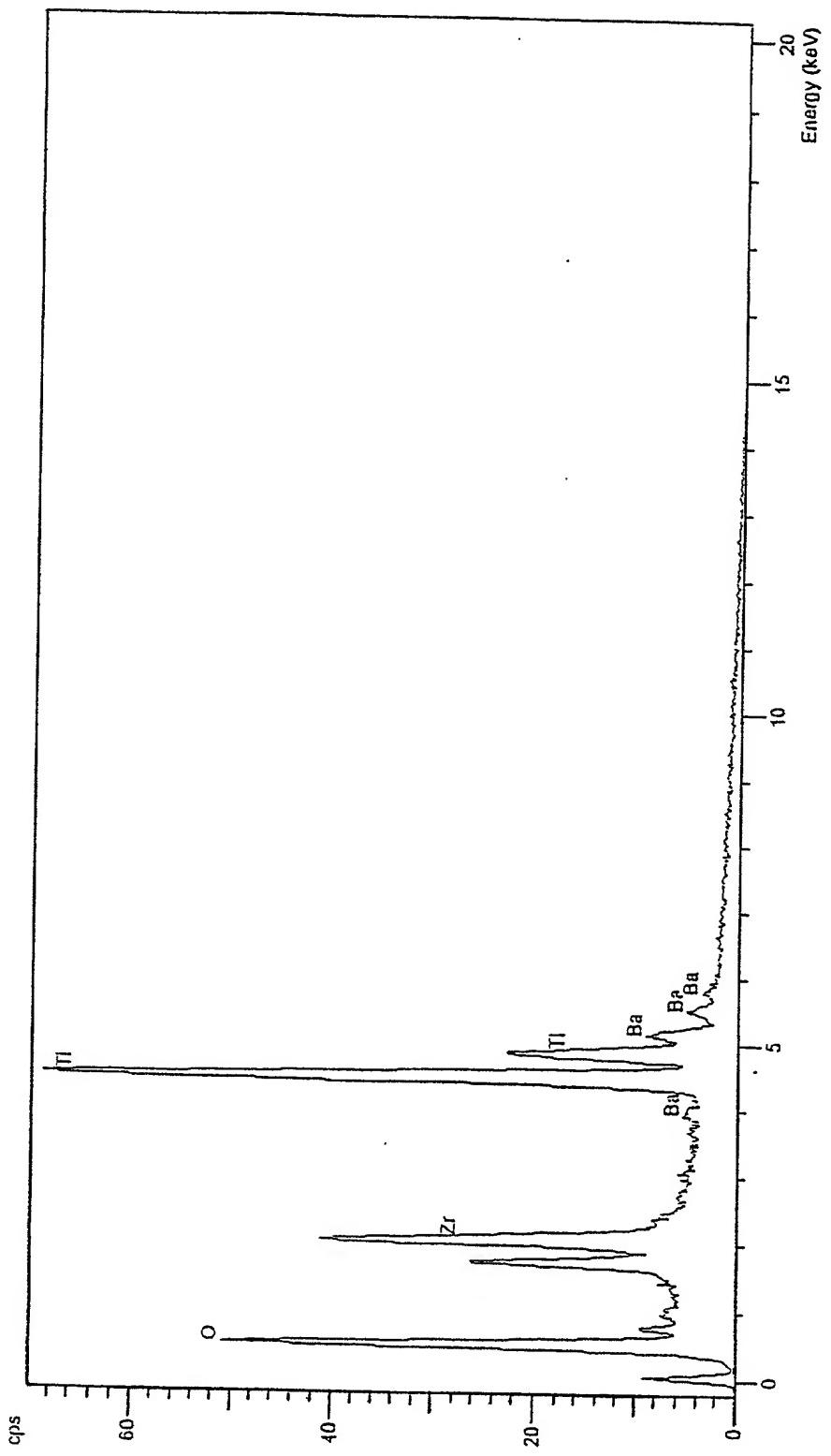


Fig. 5

Fig. 6

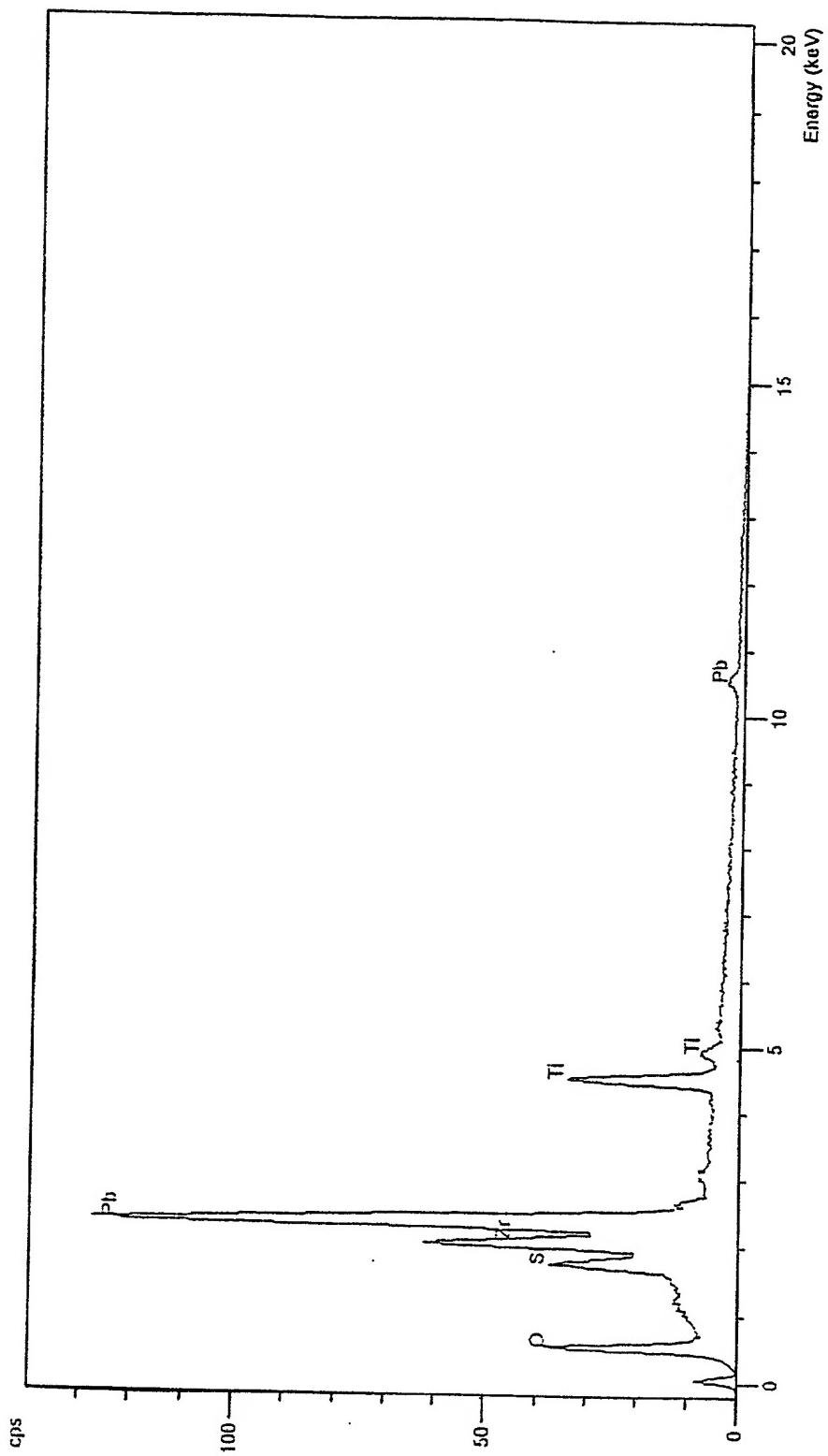
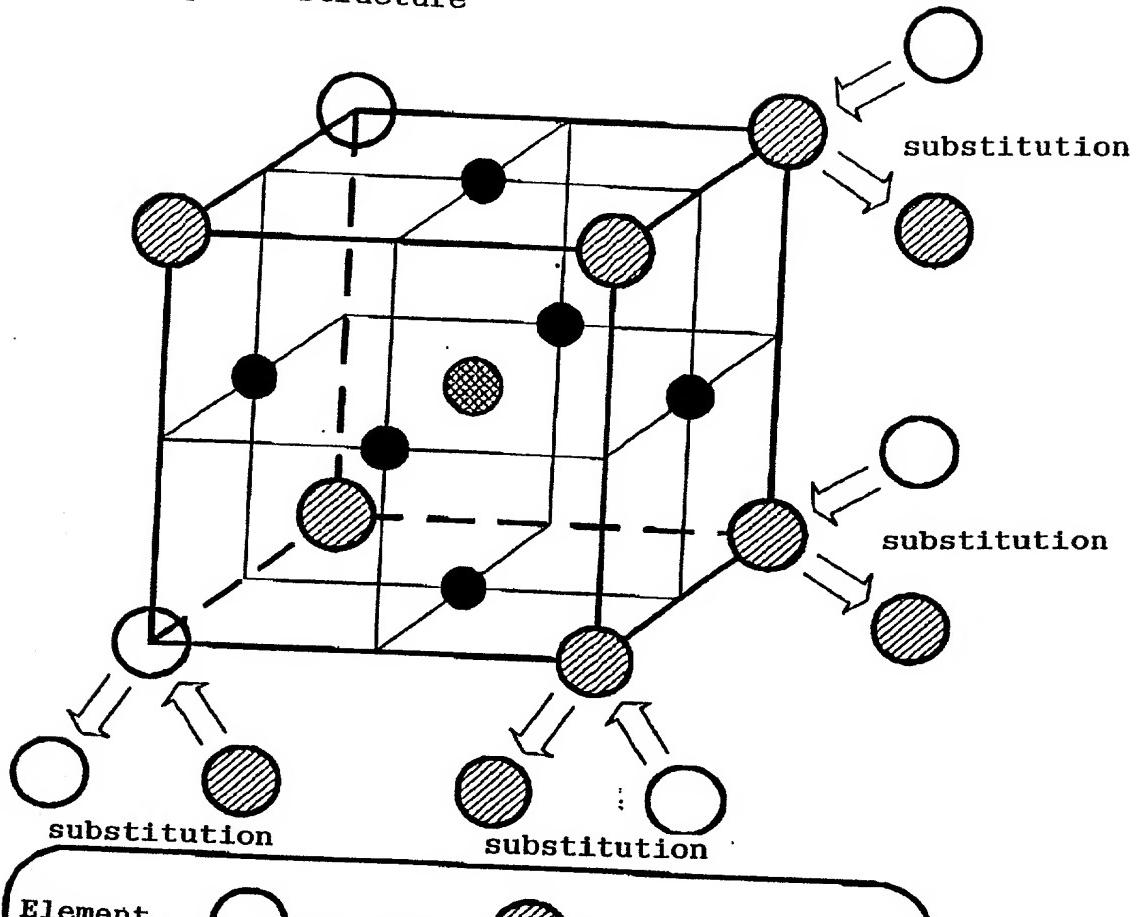


Fig. 7

ABO_3 crystal structure



Element : A ○ (eg, Pb) or ● (eg, Ba, Sr, La, Ca)
Element : B ● (eg, Zr, Ti)
Element : O ● (eg, O)

Fig. 8

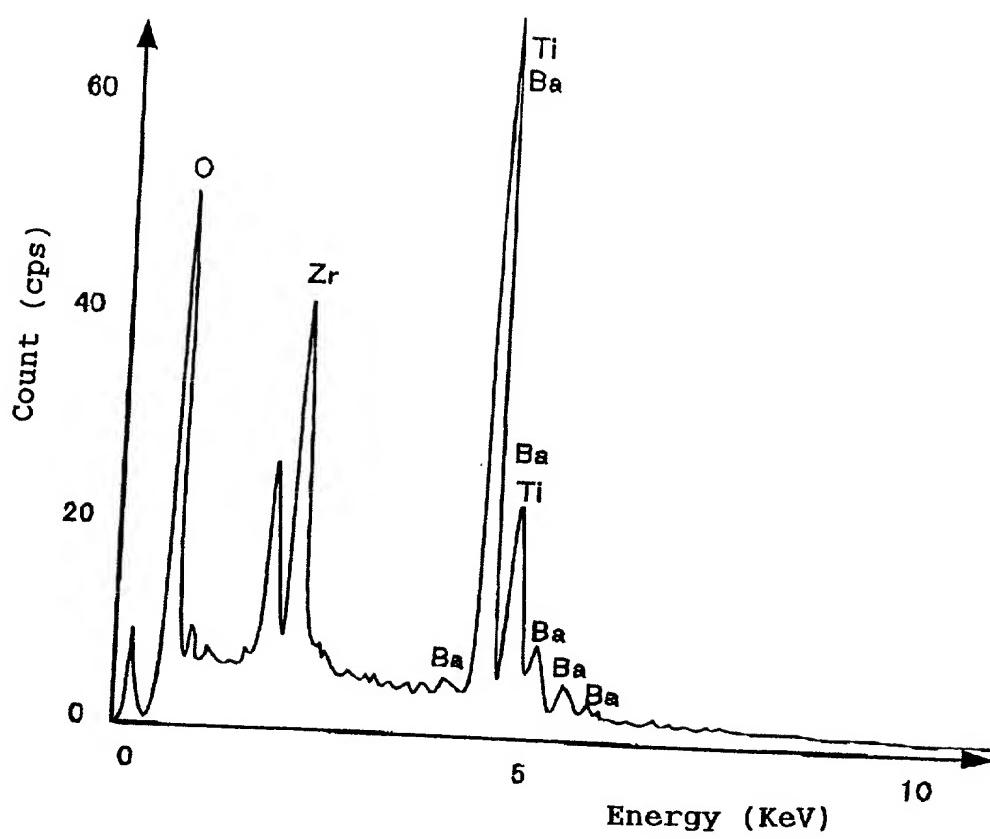


Fig. 9

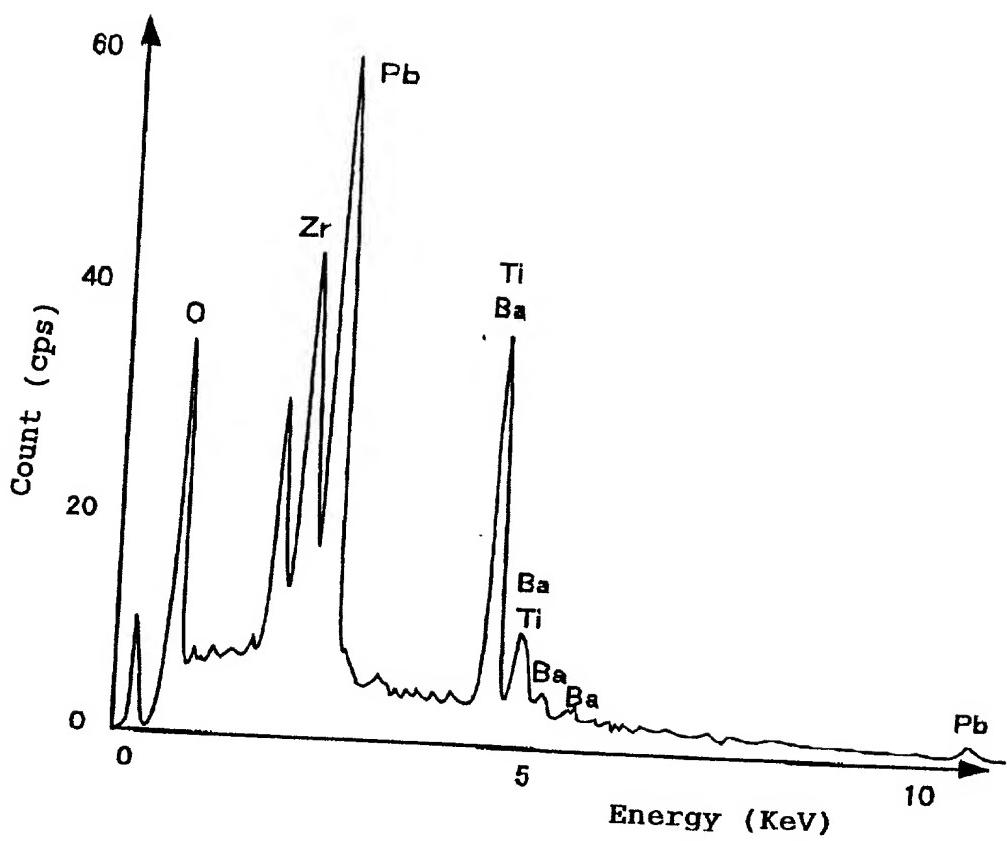


Fig. 10

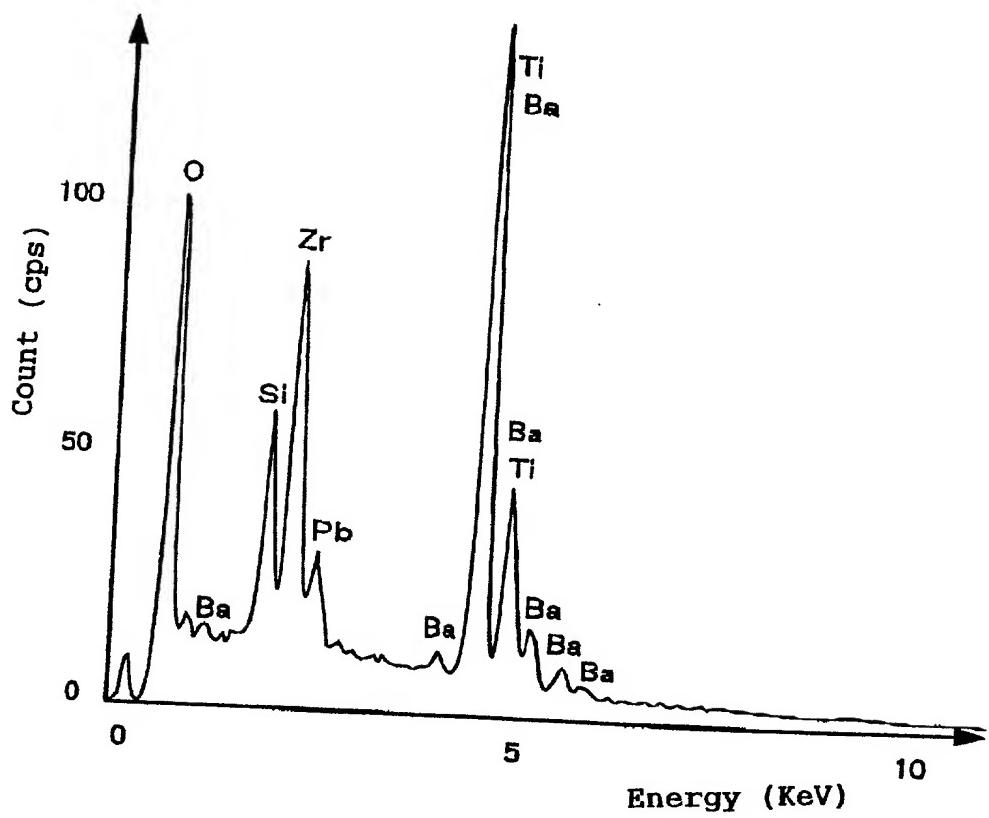


Fig. 11

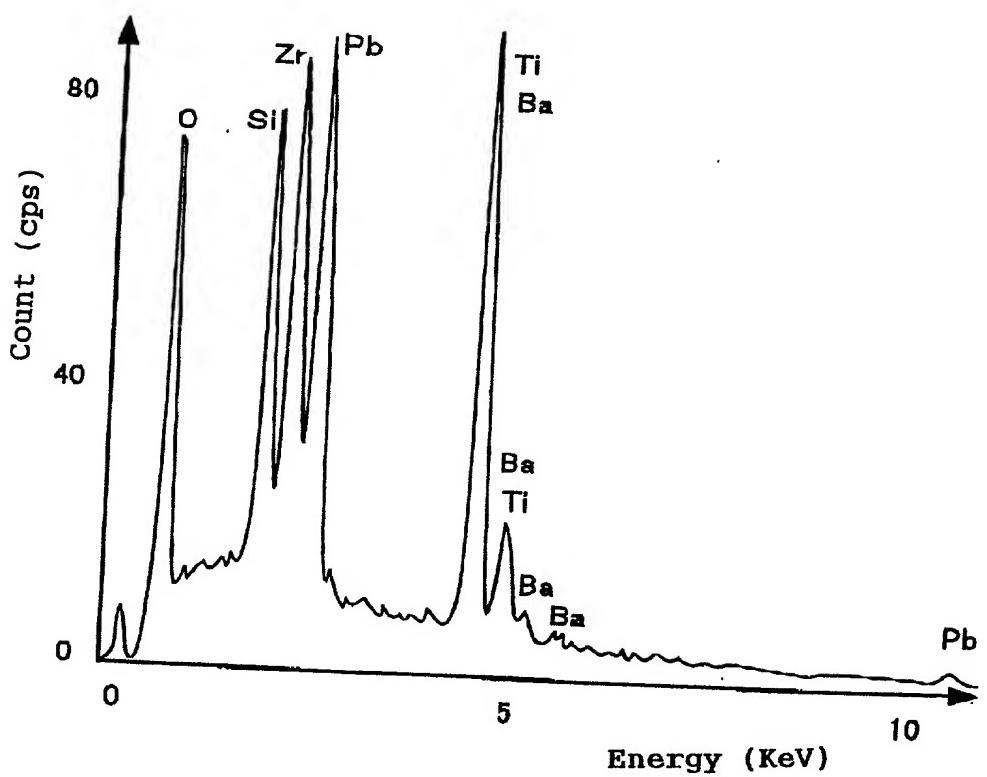


Fig. 12

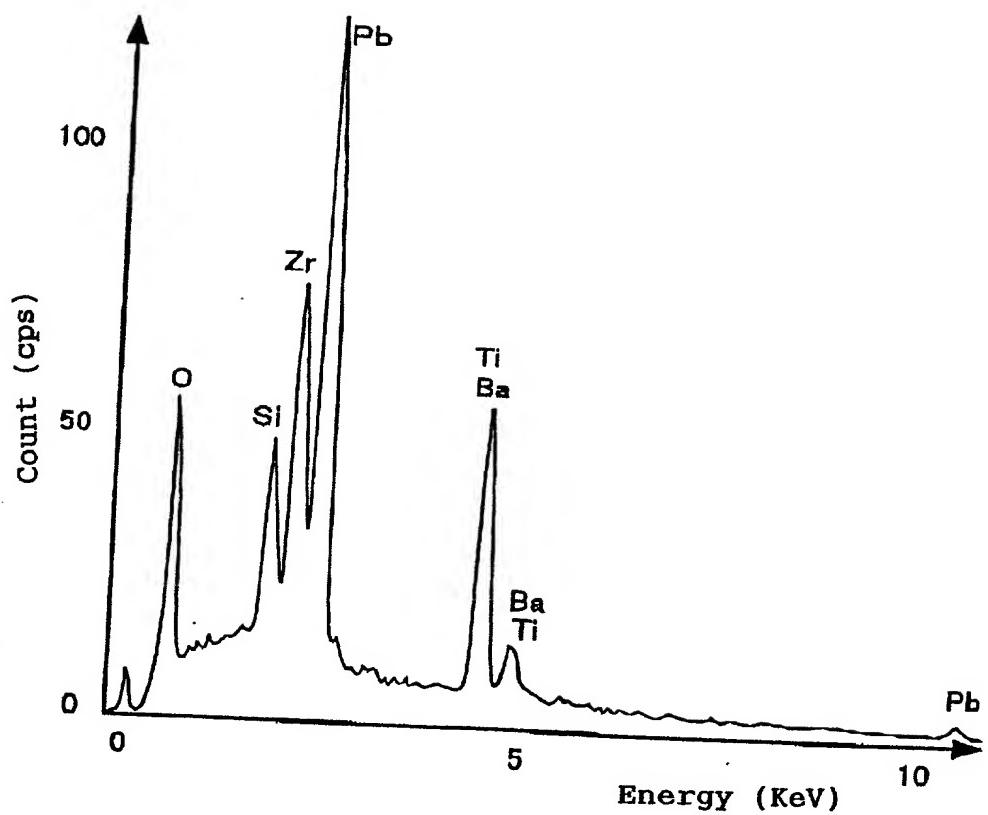


Fig. 13

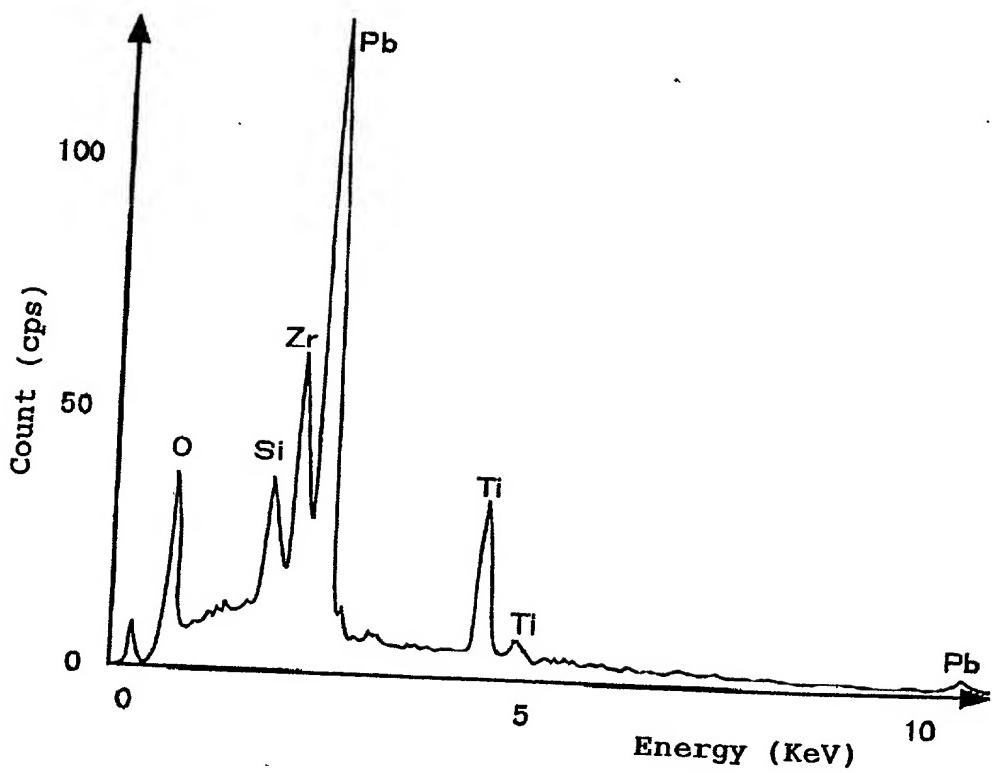


Fig. 14

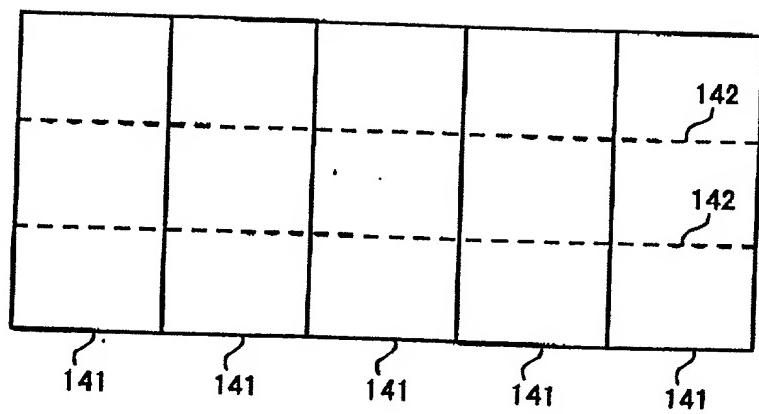
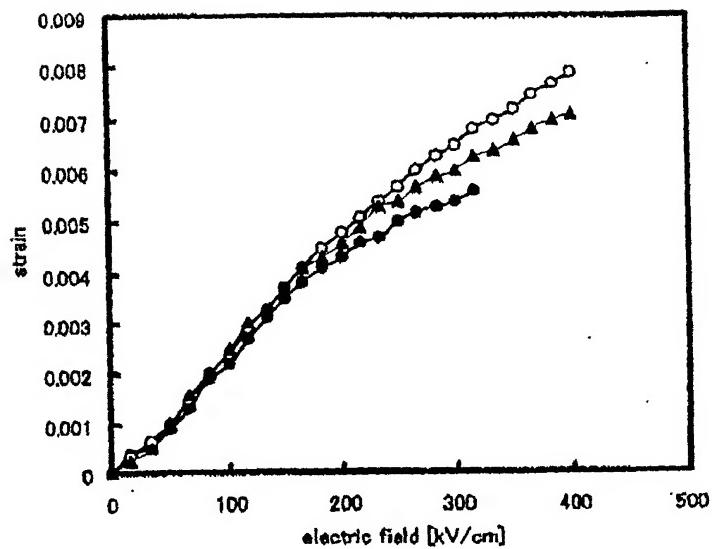


Fig. 15



Electric field strength dependence of strain

●—● dislocation: 4 layers
▲—▲ layers 3 layers
○—○ 1 layer

Note: Ultimate strain indicates the strain limit at which the film breaks.